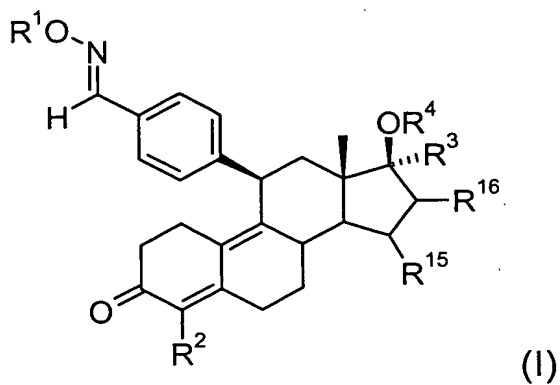


## Claims

### 1. Compounds of general formula I



in which radicals  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$  as well as  $R^{15}$  and  $R^{16}$  have the following meaning:

$R^1$  is a hydrogen atom, an alkanoyl radical with 1 to 10 carbon atoms or an optionally substituted benzoyl radical with 6-10 carbon atoms or a radical  $\text{CONHR}^5$ , whereby  $R^5$  is a hydrogen atom, an alkyl or acyl radical with 1-10 carbon atoms in each case or an alkylaryl or aralkyl radical with 6-10 carbon atoms in each case,

$R^2$  is a hydrogen atom, a halogen atom or a  $\text{CF}_3$  group,

$R^3$  is a hydrogen atom or a group  $\text{CH}_2\text{X}$ , in which X stands for a hydrogen

atom, a hydroxy group, a halogen atom, an alkyl radical with 1 or 2 carbon atoms, or X stands for a radical  $(\text{CH}_2)_n\text{CH}_2\text{Y}$  with  $n = 0$  or  $1$ , and Y stands for a halogen atom,

whereby if

$\text{R}^2$  is a halogen atom,  $\text{R}^3$  in addition can mean a group  $\text{C}_n\text{F}_m\text{H}_o$ , whereby  $n = 1, 2, 3, 4$  or  $5$ ,  $m > 1$  and  $m + o = n + 1$ ,

$\text{R}^4$  means a hydrogen atom, an alkyl or alkanoyl radical that consists of 1-10 carbon atoms in each case or a benzoyl radical with 6-10 carbon atoms or a radical  $-\text{CONHR}^5$ , whereby  $\text{R}^5$  has the above-indicated meaning,

$\text{R}^{15}$  and  $\text{R}^{16}$  represent hydrogen atoms or together a double bond,

whereby 4-[17 $\alpha$ -chloromethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime and 4-[17 $\alpha$ -chloromethyl-17 $\beta$ -methoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime are excluded.

2. Compounds of general formula 1 according to claim 1, in which  $\text{R}^2$  is a chlorine or bromine atom.

3. Compounds of general formula I according to claim 1, in which  $\text{R}^3$  is a hydrogen atom or a group  $\text{CH}_2\text{X}$ ,

in which X can be a hydrogen atom, a hydroxy group, a halogen atom, a straight-chain or branched or unsaturated alkyl radical with 1-4 carbon atoms, a radical  $(\text{CH}_2)_n\text{CH}_2\text{Y}$  with  $n = 0$  or  $1$ , and Y can be a halogen atom,

and X and/or Y can be fluorine, chlorine or bromine.

4. Compounds of general formula I, characterized in that  $R^4$  is a hydrogen atom or an alkyl radical with 1 to 4 carbon atoms.
5. Compounds of general formula I according to claim 1, in which  $R^1$  means a hydrogen atom,  $R^2$  stands for a hydrogen atom, a chlorine atom or a bromine atom, and  $R^3$  can be a hydrogen atom, a methyl group, or a  $CH_2-X$  group, whereby X stands for a fluorine, chlorine or bromine atom or a hydroxy group.
6. Compounds of general formula I, namely:
  - 4-[4'-Bromo-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[4'-Bromo-17 $\beta$ -hydroxy-17 $\alpha$ -methyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[4'-Bromo-17 $\beta$ -hydroxy-17 $\alpha$ -trifluoromethyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[17 $\alpha$ -Bromomethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[17 $\beta$ -Hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[17 $\beta$ -Acetoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[17 $\beta$ -Acetoxy-4'-bromo-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,
  - 4-[17 $\beta$ -Acetoxy-4'-bromo-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-O-acetyloxime,
  - 4-[17 $\beta$ -Benzoyloxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -(N-Ethylamino)carbonyloxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-[N-(ethylamino)carbonyl]oxime,

4-[17 $\beta$ -Methoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-[N-(ethylamino)carbonyl]oxime,

4-[17 $\beta$ -Methoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Bromo-17 $\beta$ -methoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Hydroxy-3-oxoestra-4,9,15-trien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Methoxy-3-oxoestra-4,9,15-trien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Hydroxy-17 $\alpha$ -methyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Chloro-17 $\beta$ -hydroxy-17 $\alpha$ -trifluoromethyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Chloro-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\alpha$ -Fluoromethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Bromo-17 $\alpha$ -fluoromethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Bromo-17 $\alpha$ -chloromethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Bromo-17 $\alpha$ -bromomethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Chloro-17 $\beta$ -methoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Chloro-17 $\alpha$ -chloromethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Ethoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Isopropoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Benzyloxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Methoxy-4'-trifluoromethyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[4'-Chloro-17 $\beta$ -hydroxy-17 $\alpha$ -methyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime,

4-[17 $\beta$ -Hydroxy-17 $\alpha$ -methyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-[O-(ethylamino)carbonyl]oxime,

4-[17 $\beta$ -Hydroxy-17 $\alpha$ -hydroxymethyl-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-[O-(ethylamino)-carbonyl]oxime.

7. Pharmaceutical preparations that contain at least one compound of general formula I according to claim 1 as well as a pharmaceutically compatible vehicle.
8. Use of the compounds of general formula I according to one of claims 1 to 6 for the production of pharmaceutical agents for female birth control.

9. Use of the compounds of general formula I according to one of claims 1 to 6 for the production of pharmaceutical agents for treating dysfunctional bleeding.
10. Use of the compounds of general formula I according to one of claims 1 to 6 for the production of pharmaceutical agents for treating a dysmenorrhea.
11. Use of the compounds of general formula I according to one of claims 1 to 6 for the production of pharmaceutical agents for inducing an amenorrhea.
12. Use of the compounds of general formula I according to one of claims 1 to 6 for the production of pharmaceutical agents for treating hormonal disorders in postmenopausal women.
13. Use of the compounds of general formula I according to one of claims 1 to 6 for the production of pharmaceutical agents for treating endometriosis as well as uterus myomatoses, whereby 4-[17 $\alpha$ -chloromethyl-17 $\beta$ -hydroxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime and 4-[17 $\alpha$ -chloromethyl-17 $\beta$ -methoxy-3-oxoestra-4,9-dien-11 $\beta$ -yl]benzaldehyde-1-(E)-oxime are excluded.
14. Use according to one of claims 8 to 10 in combination with at least one low-dose natural or synthetic estrogen or prodrugs thereof.
15. Use according to claim 11, wherein the estrogen is used as 3-sulfamate.
16. Use according to claim 12, wherein the estrogen-3-sulfamate is 17 $\beta$ -hydroxy-estra-1,3,5(10)-trien-3yl-sulfamate.